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EXAMINER
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SHELEHEDA, JAMES R

ART UNIT	PAPER NUMBER
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2623

MAIL DATE	DELIVERY MODE
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08/21/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/043,698

Applicant(s)

BENTOLILA ET AL.

Examiner

James Sheleheda

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/27/07 has been entered.

### ***Claim Objections***

2. Claim 15 are objected to because of the following informalities:

In claim 15, line 2, the limitation "the double random process" should be changed to --a double random process-- to maintain proper antecedence.

Appropriate correction is required.

### ***Response to Arguments***

3. Applicant's arguments with respect to claims 1, 5, 8, 9, 19 and 20 have been considered but are moot in view of the new ground(s) of rejection.

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Applicant's arguments in regards to claims 2-4, 10, 11, 13 and 16 are not convincing, as Grauch specifically discloses a rectangular array of mathematical elements (i.e. numbers), which qualifies as a "matrix".

Applicant's arguments in regards to claims 6 and 14 are not convincing, as Konig discloses a system for utilizing hidden Markov models to provide personalized information, such as targeted advertisements (column 31, lines 11-17). Grauch discloses providing targeted advertisements to viewers (i.e. ads; paragraph 99). Thus, one of ordinary skill in the art would recognize that Konig's system for providing targeted advertisements using Hidden Markov models would be analogous and beneficial to Grauch's system.

In response to applicant's arguments regarding a "double random" process, it is noted that a Hidden Markov Process is by definition a "double random" process. This is further seen in applicant's specification at Fig. 3 and page 24, lines 1-5). Therefore, applicant's arguments are not convincing.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-5, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grauch et al. (Grauch) (US 2005/0235318 A1) (of record) in view of Maissel et al. (Maissel) (6,637,029).

As to claim 1, while Grauch discloses a method of determining a television viewer's viewing habits comprising:

recording a viewer's monitor behavior with data item variables including watch channel (channel ID, paragraph 56) and watch time (paragraph 56, Fig. 7);

from a server-side system inputting historical data information regarding demographic information tagged to the viewer (the MKIS data base stores' demographics, § 96, particular ads are targeted to particular demographic households which demonstrates that the historical information is tagged to the viewer of that household, otherwise the targeted ad would not be displayed to the intended viewer, §98-99; Grauch clearly indicates from the server side, see Fig. 1, 4A-B, and 5, in which the staging server 70 collects historical data information, including demographic information, received from user for analysis (see §0081), as described in §0096, 0098 and 0099)

inputting program guide information (collecting the EPG information is part of the journal collection data that creates a model of the viewer behavior, paragraph 60); and

at a client-side system associating the program guide information with the viewer's monitor behavior and defining therefrom a knowledge base with demographic cluster information of the viewer in terms of statistical state machine

transition models (The event records are collected and stored in buffers at the client-side, paragraph 65, the data is then uploaded, paragraph 68, the uploaded event data is then merged and parsed with metadata in order to create an accurate time line, paragraphs 86-88, once the data is uploaded analysis may be run for a particular demographic cluster paragraph 98. Grauch clearly discloses the monitoring of the user selection or interactive with the EPG is done at the user terminal/receiver, see §0092-0095, thereby collecting a knowledge based of viewer behavior along with user data, i.e., user demographic information, in which the receiver gauges against some criteria for statistical purpose, as disclosed in § 0091-0094), he fails to specifically disclose recording watch duration data.

In an analogous art, Maissel discloses a television receiver system (Fig. 1; column 9, lines 59-67) for monitoring user behavior to determine viewing habits (column 12, lines 1-45) which will record watch duration information of the viewer (column 17, lines 8-54) for the typical benefit of providing a more tailored experience through customization based upon the viewer's channel surfing preferences (column 17, lines 8-54).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify Grauch's system to include recording watch duration data, as taught by Maissel, for the typical benefit of providing a more tailored experience through additional customization based upon the viewer's channel surfing preferences.

Claim 2, Grauch and Maissel disclose a method wherein the step of defining the knowledge base comprises calculating a parameterized transition matrix defining the viewer's viewing habits, the transition matrix containing information of program transitions initiated by the viewer (Clickstream Data 80 Figure 7 and paragraph 95).

Claim 3, Grauch and Maissel disclose a method of defining at least two concurrent transition matrices including a channel matrix (Clickstream Data 80 Channel ID, Figure 7) and a genre matrix (Content ID Prevue Guide Data 82, Figure 7).

Claim 4, Grauch and Maissel disclose a method which comprises defining the transition matrix as a two-dimensional matrix with transitions from television channels to television channels in temporal form (Figure 7 and paragraph 95).

Claim 5, Grauch and Maissel disclose a method which comprises providing feedback information with the viewer's monitor behavior by recording a click stream (receiving messages from the user input device, paragraph 36 and log all events, paragraph 40).

Claim 22, Grauch and Maissel disclose wherein the parameterized transition matrix is in a temporal form (see Grauch at Fig. 7, indicating the clickstream matrix in temporal form, mapping user actions to time).

Claim 23, Grauch and Maissel disclose wherein the transition matrix includes a first matrix for TV watching activities (Clickstream Data 80 Figure 7) and a second matrix for TV channel surfing (storing user surfing data separately from viewing data; see Maissel at column 17, lines 17-50).

6. Claims 8-13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grauch in view of Eldering et al. (Eldering) (6,457,010).

As to claim 8, Grauch discloses a the computer-readable medium (paragraph 33) having stored thereon a plurality of processor-executable instructions for implementing a function of:

capturing state transitions (Figure 7) by defining monitor behavior in a plurality of statistical state machine families each representing a given viewer or demographic group viewing behavior (statistically provisioned paragraph 65, and paragraph 95);

combining the statistical state machine families into global statistical state machines (100 Fig. 1 and event records are collected and analyzed paragraph 81);

wherein the global profile is suitable for determining programming content of a television server (the system targets demographic groups that use the system paragraph 98 - 99), he fails to specifically disclose a global probability density function and outputting the global profile based on the global probability density function, updating and reinforcing the global probability density function upon determining that a given probability density function has a higher confidence level than



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a previous probability density function and outputting a global profile based on the global probability density function.

In an analogous art, Eldering discloses a television system (see Figs. 1-4 and 18) for characterizing user behavior (column 2, lines 14-23) wherein user profiles are generated based upon interactions of users (see Figs. 1 and 5-7; column 9, lines 13-48) including probability density functions (column 10, line 26-column 13, line 59) and wherein the probability density function is updated and reinforced upon determining that a given probability density function has a higher confidence level than a previous probability density function (adjusting the probable profile categories based upon new session values; column 13, line 31-column 14, line 18) and outputting a global profile based on the global probability density function (column 14, line 52-column 15, line 18) for the typical benefit of providing an accurate and automatic means to characterize and identify numerous viewing interests and demographics (column 2, line 14-54 and column 14, lines 34-51).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify Grauch's system to include a global probability density function and outputting the global profile based on the global probability density function, updating and reinforcing the global probability density function upon determining that a given probability density function has a higher confidence level than a previous probability density function and outputting a global profile based on the global probability density function, as taught by Eldering, for the typical benefit of

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providing an accurate and automatic means to characterize and identify numerous viewing interests and demographics.

Claim 9, Grauch and Eldering disclose state transitions represent a television viewer's monitor behavior and the statistical state machines are selected from the group consisting of watch start time (Figure 7 and paragraph 95), watch channel (Figure 7) and at least one of watch date and watch duration (see Eldering at Fig. 6 and 7).

Claim 10, Grauch and Eldering disclose the global profile that represents demographic cluster information of the viewer in terms of the statistical state machine transition models (Figure 7 and the information collected is what the system uses to determine demographic groups, paragraph 95, and particular demographic group means the same thing as a cluster of users paragraph 98).

Claim 11, Grauch and Eldering disclose the computer-readable medium wherein the state machines are defined in a parameterized transition matrix defining the viewer's viewing habits, the transition matrix containing information of program transitions initiated by the viewer (clickstream Data 80 Figure 7 and paragraph 95).

Claim 12, Grauch and Eldering disclose the computer-readable medium wherein the transition matrix is one of at least two concurrent transition matrices including a

channel matrix (Clickstream Data 80 Channel ID, Figure 7) and a genre matrix (Content ID Prevue Guide Data 82, Figure 7).

Claim 13, Grauch and Eldering disclose the computer-readable medium wherein the transition matrix is a two-dimensional matrix with transitions from television channels to television channels in temporal form (Figure 7 and paragraph 95).

Claim 16, Grauch and Eldering disclose at a client-side system associating the program guide information with the viewer's monitor behavior and defining therefrom a knowledge base with demographic cluster information of the viewer in terms of statistical state machine transition models (The event records are collected and stored in buffers at the client-side, paragraph 65, the data is then uploaded, paragraph 68, the uploaded event data is then merged and parsed with metadata in order to create an accurate time line, paragraphs 86-88, once the data is uploaded analysis may be run for a particular demographic cluster paragraph 98. Grauch clearly discloses the monitoring of the user selection or interactive with the EPG is done at the user terminal/receiver, see §0092-0095, thereby collecting a knowledge based of viewer behavior along with user data, i.e., user demographic information, in which the receiver gauges against some criteria for statistical purpose, as disclosed in § 0091-0094).

7. Claims 6, 7 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grauch and Maissel and further in view of Konig (6,981,040) (of record).

Claim 6, Grauch and Maissel fail to specifically teach the method and corresponding computer readable medium which comprises parameterizing the viewer's monitor behavior with a pseudo hidden Markov process, and defining a low-level statistical state machine modeling a behavioral cluster and a top-level statistical state machine with active behavioral clusters and an interaction between the active behavioral clusters.

Konig, in an analogous art, discloses parameterizing the viewer's monitor behavior with a double random pseudo hidden Markov process (Hidden Markov Model, column 28 lines 14-18), and defining a low-level statistical state machine modeling a behavioral cluster (any individual user model can also apply to a cluster of users, column 14 lines 61-52, user response is monitored, column 27 lines 1-11 and column 27 lines 49-55), and a top-level statistical state machine with active behavioral clusters and an interaction between the active behavioral clusters (the documents are evaluated using the user model to estimate the user interest column 29 lines 49-52). Therefore, it would have been obvious to one of ordinary skill in the art to modify Grauch and Maissel's system to include parameterizing the viewer's monitor behavior with a pseudo hidden Markov process, and defining a low-level statistical state machine modeling a behavioral cluster and a top-level statistical state machine with active behavioral clusters and an interaction between the active behavioral clusters, as taught by Konig, for the benefit of allowing the system to make accurate models of viewer usage in order to target the most relevant material

towards the desired user or cluster of users, as suggested by Konig, see Col. 3, lines 45-Col. 4, lines 16.

Claims 7 and 18, Grauch, Maissel and Konig disclose a method and corresponding machine readable medium which comprises defining the pseudo hidden double random process (wherein a hidden Markov process is double random; see Konig at column 28, lines 17-78 and column 3, line 45-column 4, line 16) with a plurality of dimensions and determining parallel statistical state machine transition events in at least two of three state categories including channel, genre, and title (channel ID and content ID; see Grauch at Figure 7 and paragraph 95).

8. Claims 14, 15, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grauch and Eldering and further in view of Konig (6,981,040) (of record).

Claim 14, Grauch and Eldering fail to specifically teach the method and corresponding computer readable medium which comprises parameterizing the viewer's monitor behavior with a pseudo hidden Markov process, and defining a low-level statistical state machine modeling a behavioral cluster and a top-level statistical state machine with active behavioral clusters and an interaction between the active behavioral clusters.

Konig, in an analogous art, discloses parameterizing the viewer's monitor behavior with a double random pseudo hidden Markov process (Hidden Markov Model,

column 28 lines 14-18), and defining a low-level statistical state machine modeling a behavioral cluster (any individual user model can also apply to a cluster of users, column 14 lines 61-52, user response is monitored, column 27 lines 1-11 and column 27 lines 49-55), and a top-level statistical state machine with active behavioral clusters and an interaction between the active behavioral clusters (the documents are evaluated using the user model to estimate the user interest column 29 lines 49-52).

Therefore, it would have been obvious to one of ordinary skill in the art to modify Grauch and Eldering's system to include parameterizing the viewer's monitor behavior with a pseudo hidden Markov process, and defining a low-level statistical state machine modeling a behavioral cluster and a top-level statistical state machine with active behavioral clusters and an interaction between the active behavioral clusters, as taught by Konig, for the benefit of allowing the system to make accurate models of viewer usage in order to target the most relevant material towards the desired user or cluster of users, as suggested by Konig, see Col. 3, lines 45-Col. 4, lines 16).

Claim 15, Grauch and Eldering disclose a method and corresponding machine readable medium which comprises a plurality of dimensions and determining parallel statistical state machine transition events in at least two of three state categories including channel, genre, and title (channel ID and content ID; see Grauch at Figure 7 and paragraph 95), they fail to specifically disclose a double random process.

Konig, in an analogous art, discloses parameterizing the viewer's monitor behavior with a double random pseudo hidden Markov process (Hidden Markov Model,

column 28 lines 14-18), and defining a low-level statistical state machine modeling a behavioral cluster (any individual user model can also apply to a cluster of users, column 14 lines 61-52, user response is monitored, column 27 lines 1-11 and column 27 lines 49-55), and a top-level statistical state machine with active behavioral clusters and an interaction between the active behavioral clusters (the documents are evaluated using the user model to estimate the user interest column 29 lines 49-52).

Therefore, it would have been obvious to one of ordinary skill in the art to modify Grauch and Eldering's system to include parameterizing the viewer's monitor behavior with a pseudo hidden Markov process, as taught by Konig, for the benefit of allowing the system to make accurate models of viewer usage in order to target the most relevant material towards the desired user or cluster of users, as suggested by Konig, see Col. 3, lines 45-Col. 4, lines 16.

As to claim 20, Grauch, Eldering and Konig disclose wherein the pseudo hidden Markov process is a double random process (wherein a hidden Markov process is a double random process).

As to claim 21, Grauch, Eldering and Konig disclose defining a low level statistical state machine modeling a behavioral cluster (see Eldering at Figs. 4-7), and a top level statistical state machine with active behavioral clusters and an interaction among the active behavioral clusters (see Eldering at Figs. 8A-15 and column 10, line 26-column 13, line 59).

9. Claims 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grauch and Maissel and further in view of Eldering.

As to claim 17, Grauch and Maissel fail to specifically disclose wherein the data items have a probability function with a confidence level, and updating the historical data information upon determining that a given data item has a probability function with a higher confidence level than a previous data item.

In an analogous art, Eldering discloses a television system (see Figs. 1-4 and 18) for characterizing user behavior (column 2, lines 14-23) wherein user profiles are generated based upon interactions of users (see Figs. 1 and 5-7; column 9, lines 13-48) including probability density functions (column 10, line 26-column 13, line 59) and wherein the probability density function is updated and reinforced upon determining that a given probability density function has a higher confidence level than a previous probability density function (adjusting the probable profile categories based upon new session values; column 13, line 31-column 14, line 18) and outputting a global profile based on the global probability density function (column 14, line 52-column 15, line 18) for the typical benefit of providing an accurate and automatic means to characterize and identify numerous viewing interests and demographics (column 2, line 14-54 and column 14, lines 34-51).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify Grauch and Maissel's system to include wherein the data items have a probability function with a confidence level, and updating the



historical data information upon determining that a given data item has a probability function with a higher confidence level than a previous data item, as taught by Eldering, for the typical benefit of providing an accurate and automatic means to characterize and identify numerous viewing interests and demographics.

As to claim 19, Grauch and Maissel fail to specifically disclose a low level statistical state machine modeling a behavioral cluster, and a top level statistical state machine with active behavioral clusters and an interaction among the active behavioral clusters.

In an analogous art, Eldering discloses a television system (see Figs. 1-4 and 18) for characterizing user behavior (column 2, lines 14-23) wherein user profiles are generated based upon interactions of users (see Figs. 1 and 5-7; column 9, lines 13-48) including a low level statistical state machine modeling a behavioral cluster (see Eldering at Figs. 4-7), and a top level statistical state machine with active behavioral clusters and an interaction among the active behavioral clusters (see Eldering at Figs. 8A-15 and column 10, line 26-column 13, line 59) for the typical benefit of providing an accurate and automatic means to characterize and identify numerous viewing interests and demographics (column 2, line 14-54 and column 14, lines 34-51).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify Grauch and Maissel's system to include a low level statistical state machine modeling a behavioral cluster, and a top level statistical state machine with active behavioral clusters and an interaction among the active behavioral

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clusters, as taught by Eldering, for the typical benefit of providing an accurate and automatic means to characterize and identify numerous viewing interests and demographics.

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Herz et al. (6,088,722) disclosing the use of Markov modeling in a television system (column 48, line 62-column 49, line 9).

11. The following are suggested formats for either a Certificate of Mailing or Certificate of Transmission under 37 CFR 1.8(a). The certification may be included with all correspondence concerning this application or proceeding to establish a date of mailing or transmission under 37 CFR 1.8(a). Proper use of this procedure will result in such communication being considered as timely if the established date is within the required period for reply. The Certificate should be signed by the individual actually depositing or transmitting the correspondence or by an individual who, upon information and belief, expects the correspondence to be mailed or transmitted in the normal course of business by another no later than the date indicated.

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Please refer to 37 CFR 1.6(d) and 1.8(a)(2) for filing limitations concerning facsimile transmissions and mailing, respectively.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Sheleheda whose telephone number is (571) 272-7357. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Kelley can be reached on (571) 272-7331. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

James Sheleheda  
Patent Examiner  
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JS

  
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